

AMENDMENTS TO THE CLAIMS¹

1. (Currently Amended): A method ~~Method~~ of detecting, from a received signal, a plurality $[[K]]$ of symbols ~~($d_k(i)$)~~ transmitted by or ~~for~~ to a plurality $[[K]]$ of users ~~from a received signal~~, each symbol of a user belonging to a modulation constellation, the detection method using a lattice of points $[[\{\Xi\}]]$ generated by a constellation including the said modulation constellations, the ~~said~~ plurality of symbols of the ~~different~~ users being represented by a point ~~amongst~~ among a subset of points in the ~~said~~ lattice, the ~~said~~ constellation and the received signal being represented by a point characteristic of ~~this~~ the signal, referred to as the received point, translated from a point in the ~~said~~ constellation by a noise vector, the method comprising: ~~(n)~~, ~~characterised in that it comprises a step of~~ orthogonal projection of

orthogonally projecting the received point onto an a first affine subspace, ~~referred to as a projection subspace,~~ that is parallel to or merged with an a second affine subspace delimiting the ~~said~~ constellation; $[[,]]$ and

~~a step of seeking the~~ determining a closest neighbor to the projected point ~~thus~~ projected amongst among the points in the ~~said~~ constellation.

2. (Currently Amended): The ~~Detection~~ method according to Claim 1, ~~characterised in that~~ wherein the ~~said~~ second affine subspace delimiting the constellation is determined according to the position of the received point with respect to the ~~said~~ constellation.

3. (Currently Amended): The ~~Detection~~ method according to Claim 2, ~~characterised in that~~ wherein the search for the closest neighbor is limited to the points in the constellation belonging to a sphere centered on the ~~said~~ projected point.

¹ This listing of claims will replace all prior versions and listings of claims in the application.

4. (Currently Amended): The Detection method according to Claim 1 ~~or 2~~, ~~characterised in that~~, wherein the first affine projection subspace ~~being~~ is merged with ~~an~~ the second affine subspace delimiting the constellation, the search for the closest neighbor is effected ~~amongst the~~ among points in the constellation belonging to the ~~said~~ second affine subspace delimiting the constellation.

5. (Currently Amended): The Detection method according to Claim 4, ~~characterised in that~~ wherein the search for the closest neighbor is limited to the points in the second affine subspace belonging to a sphere of the ~~said~~ subspace ~~entered~~ centered on the ~~said~~ projected point.

6. (Currently Amended): The Detection method according to Claim 1, wherein one ~~of the preceding claims~~, ~~characterised in that~~ the projection step is performed only if the received point is remote from the ~~said~~ constellation by more than a predetermined distance.

7. (Currently Amended): The Detection method according to Claim 1, wherein one ~~of the preceding claims~~, ~~characterised in that~~, the symbols of each user ~~being the subject of a multiplication~~ are multiplied by a signature of ~~this~~ the user before being transmitted over a transmission channel, ~~the~~ coordinates of the received point are obtained by a step of adapted filtering of the received signal, the filtering being adapted to the transmission channels and to the signatures of the ~~different~~ users.

8. (Currently Amended): A reception ~~Reception~~ device for a DS-CDMA telecommunication system, comprising a detection device ~~adapted to implement the detection~~

~~method according to one of the preceding claims~~ configured to detect, from a received signal, a plurality of symbols transmitted by or to a plurality of users, each symbol of a user belonging to a modulation constellation, the detection method using a lattice of points generated by a constellation including the modulation constellations, the plurality of symbols of the users being represented by a point among a subset of points in the lattice, the constellation and the received signal being represented by a point characteristic of the signal, referred to as the received point, translated from a point in the constellation by a noise vector, the device comprising:

means for orthogonally projecting the received point onto a first affine subspace that is parallel to or merged with a second affine subspace delimiting the constellation; and

means for determining a closest neighbor to the projected point among the points in the constellation.

9. (Currently Amended): ~~A reception~~ Reception device for an MC-CDMA telecommunication system, comprising a detection device ~~adapted to implement the detection method according to one of Claims 1 to 7~~ configured to detect, from a received signal, a plurality of symbols transmitted by or to a plurality of users, each symbol of a user belonging to a modulation constellation, the detection method using a lattice of points generated by a constellation including the modulation constellations, the plurality of symbols of the users being represented by a point among a subset of points in the lattice, the constellation and the received signal being represented by a point characteristic of the signal, referred to as the received point, translated from a point in the constellation by a noise vector, the detection device comprising:

means for orthogonally projecting the received point onto a first affine projection subspace that is parallel to or merged with a second affine subspace delimiting the constellation; and

means for determining a closest neighbor to the projected point among the points in the constellation.